

Bridgeton Landfill Radionuclide & Uranium discharge data

DATE	UNIT	Gross Alpha	Equiv MO River STP Effluent	Equiv Bissell Pt STP Effluent	Gross Beta	Equiv MO River STP Effluent	Equiv Bissell Pt STP Effluent	Gross Gamma	Equiv MO River STP Effluent	Equiv Bissell Pt STP Effluent	Radium-226	Equiv MO River STP Effluent	Equiv Bissell Pt STP Effluent	Radium-228	Equiv MO River STP Effluent	Equiv Bissell Pt STP Effluent	Ra-226 + Ra-228 Mo Riv STP Effluent	Ra-226 + Ra-228 Bissell STP Effluent	Uranium (Total)	UNIT	Equiv MO River STP Effluent	Equiv Bissell Pt STP Effluent	Suspended Solids	UNIT	
02/25/10	pci/L	3	0.0200		56.3	0.3753		20	0.1333					2.18	0.01453		0.03613		9.8	ug/L	0.0653		21	mg/L	
05/25/10	pci/L	< 5.27	0.0351		114	0.7600		< 4.75	< 0.0317		3.24	0.0216							0.705	ug/L	0.0047		62	mg/L	
09/08/10	pci/L	9	0.0600		58	0.3867		0.6	0.0040		2.81	0.0187		1.46	0.00973		0.02847		16	ug/L	0.1067		22	mg/L	
11/17/10	pci/L	15	0.1000		48.2	0.3213		2.6	0.0173		4.31	0.0287		1.02	0.00680		0.03553		13.9	ug/L	0.0927		22	mg/L	
03/16/11	pci/L	< 3	< 0.0200		84	0.5600		< 20	< 0.1333		4.6	0.0307		< 1	< 0.0067		< 0.03733		16.8	ug/L	< 0.1120		33	mg/L	
05/11/11	pci/L	< 1	< 0.0067		47	0.3133		< 1	< 0.0067		3.22	0.0215		2.04	0.01360		0.03507		< 1	ug/L	< 0.0067		23	mg/L	
08/18/11	pci/L	31	0.2067		59	0.3933		< 6.2	< 0.0413		3.3	0.0220		2.5	0.01667		0.03867		< 1	ug/L	< 0.0067		46	mg/L	
11/29/11	pci/L	21	0.1400		72	0.4800		< 20	< 0.1333		5.16	0.0344		1.13	0.00753		0.04193		< 5	ug/L	< 0.0333		61	mg/L	
03/07/12	pci/L	< 40	< 0.2667		183	1.2200		< 13	< 0.0867		9	0.0600		< 7.5	< 0.05000		< 0.11000		< 4	ug/L	< 0.0267		170	mg/L	
05/15/12	pci/L	29	0.1933		160	1.0667		< 20	< 0.1333		8.6	0.0573		3.7	0.02467		0.08200						660	mg/L	
09/19/12	pci/L	6	0.0400		331	2.2067		0.5	0.0033		13.1	0.0873		7.3	0.04867		0.13600		< 2	ug/L	< 0.0133		1300	mg/L	
12/13/12	pci/L	< 69.1	< 0.4607		379	2.5267		< 6.79	< 0.0453		14	0.0933		9.69	0.06460		0.15793		< 20	ug/L	< 0.1333		340	mg/L	
04/05/13	pci/L	< 117 a	< 0.0780		408 b	0.2720		< 20	< 0.0133		11.4	0.0076		< 6.13	< 0.00409		< 0.01169		< 100	ug/L c	< 0.0667		1500	mg/L	
06/08/13	pci/L	46.6	0.0311	0.0179	429	0.2860	0.1650	1.54	0.0010	0.0006	0.0752	0.0001	0.0000	2.64	0.00176	0.0010	0.00181	0.0010	2.08	ug/L	0.0014	0.0008	2800	mg/L	
09/13/13	pci/L	< 216 d	< 0.1440	< 0.2908	819	0.5460	1.1025	589 e	0.3927	0.7929	0.142	0.0001	0.0002	2.09	0.0014	0.0028	0.00149	0.0030	7.8	ug/L	0.0052	0.0105	14000	mg/L	
EPA MCL for drinking water: (for comparison purposes only)				15 pci/L	15 pci/L		4 mrem/yr	4 mrem/yr		None	None						Ra-226 + Ra228 combined = 5 pci/L	Ra-226 + Ra228 combined = 5 pci/L			30 ug/L	30 ug/L			
NRC discharge limit to sewer:							K-40=40,000 pci/L				600 pci/L			600 pci/L											

200,000 GPD avg. discharge from Bridgeton Landfill to MO River STP, to February 2013
 20,000 GPD max. discharge from Bridgeton Landfill to MO River STP, from 4/24/13
 30,000,000 GPD avg. flow from Mo River STP

50,000 max GPD hauled from Bridgeton Landfill to Bissell Point STP on 6/8/13
 175,000 max GPD hauled from Bridgeton Landfill to Bissell Point STP on 9/13/13
 130,000,000 GPD avg. flow from Bissell Point STP

a: Estimated value for 4/5/13 test was 3.71 pci/L

b: Original 4/5/13 test was 9640 pci/L, 407-408 retest, primarily K-40, nonsignificant Ra-228 or Strontium or Yttrium-90, K conc = 557 mg/L, K-40 = 371 pci/L
 K-40 (a naturally occurring radionuclide) is specifically excluded from inclusion in gross beta drinking water MCL's list of 168 individual emitters

4/5/13 test result for Potassium-40 (beta-gamma) was 371 pci/L, likely entrained in higher total suspended solids

See Barr Engineering report dated June 20, 2013 and John R. Frazier letter dated June 25, 2013

c: 4/5/13 test MDL was 23 pci/L, reporting limit was 100 pci/L

d 9/13/13 test initially showed 216 +/- 106 with dupl of 87.1 +/- 87. Analysis of potential alpha emitters ascertained that the sample does not contain any positive alpha emitting radionuclides.

e 9/13/13 gross gamma is all from naturally-occurring Potassium-40, entrained in very high total suspended solids.